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| 10/761,708 | 01/21/2004 | Simone Mazzoni | 859063.462C1 | 3708 |

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| EXAMINER | |
|---|---|
| NGUYEN, TOAN D | |

| ART UNIT | PAPER NUMBER |
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| 2616 | |

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/761,708 | MAZZONI ET AL. | |
| | Examiner | Art Unit | |
| | TOAN D. NGUYEN | 2616 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *21 January 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *1/21/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

1. Claims 5, 10, 15 and 17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 5, line 2, it is unclear as to what is meant by "the memory stores only the shifted samples without storing any samples of the symbol other than the shifted samples." Therefore, the scope of the claim is unascertainable. Similar problem exists in claim 10, lines 2-4.

Claim 15, lines 1-3, it is unclear as to what is meant by "wherein the storing step stores only the subset of samples of the symbol without storing any of the samples of the symbol other than the subset." Therefore, the scope of the claim is unascertainable.

Claim 17, lines 3-4, it is unclear as to what is meant by "storing, prior to outputting the symbol, only the shifted samples without storing any of the samples of the symbol other than the shifted samples." Therefore, the scope of the claim is unascertainable.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States

only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 3-6, 8-11 and 13-17 are rejected under 35 U.S.C. 102(e) as being anticipated by the applicant's admitted prior art (AAPA).

For claim 1, the applicant's admitted prior art (AAPA) discloses the circuit comprising:

means for shifting the phase of each complex coefficient by a value proportional to its frequency, so that said last samples of the symbol are shifted at the beginning of the symbol according to a circular permutation (figure 1, references $f_1 \ldots f_N$, page 1, lines 16-23, and page 2, lines 13-14);

a memory (figure 2, reference 14) for storing the shifted samples (page 2, lines 20-27); and

means for copying at the end of the symbol the stored samples (figure 2, reference 14, page 2, lines 24-27).

For claim 3, the applicant's admitted prior art (AAPA) discloses wherein the memory is of FIFO type (figure 2, reference 14, page 2, line 18).

For claim 4, the applicant's admitted prior art (AAPA) discloses wherein the means for copying the stored samples include a multiplexer (figure 2, reference 16), a first input and a second input of which are respectively connected to the input and to the output of the memory (page 2, lines 18-19).

As far as understood with respect to claim 5, the applicant's admitted prior art (AAPA) discloses wherein the means for shifting delays the symbol only by the duration

of said prefix and the memory stores only the shifted samples without storing any of the samples of the symbol other than the shifted-samples ((page 3, line 12).

For claim 6, the applicant's admitted prior art (AAPA) discloses the circuit comprising:

shifting the phase of each complex coefficient by a value proportional to the frequency with which it is associated, so that said last samples of the symbol are shifted at the beginning of the symbol according to a circular permutation (figure 1, references $f_1 \ldots f_N$ , page 1, lines 16-23, and page 2, lines 13-14);

storing (figure 2, reference 14) the shifted samples of the beginning of the symbol (page 2, lines 20-21); and

copying the stored samples at the end of the symbol (figure 2, reference 14, page 2, lines 24-27).

For claim 8, the applicant's admitted prior art (AAPA) discloses wherein the storing step stores the samples in a FIFO memory (figure 2, reference 14, page 2, lines 18-19).

For claim 9, the applicant's admitted prior art (AAPA) discloses wherein the storing step stores only the last samples of the symbol without storing any of the samples of the symbol other than the last samples (page 2, lines 24-26).

As far as understood with respect to claim 10, the applicant's admitted prior art (AAPA) discloses wherein the shifting step includes delaying the symbol only by the duration of said prefix and the storing step stores only the shifted samples without

storing any of the samples of the symbol other than the shifted samples (page 3, line 12).

For claim 11, the applicant's admitted prior art (AAPA) discloses the circuit comprising:

shifting a phase of each complex coefficient by a value proportional to the frequency with which the complex coefficient corresponds (figure 1, references $f_1 \ldots f_N$, page 1, lines 16-23, and page 2, lines 13-14);

transforming the symbol to a time domain by performing an inverse Fourier transform of the phase-shifted complex coefficients to produce a set of samples as the symbol in the time domain (figure 2, reference 12, page 2, lines 1-8); and

outputting the symbol in the time domain with a subset of the samples as a prefix of the symbol (page 2, line 20 to page 3, line 3).

For claim 13, the applicant's admitted prior art (AAPA) discloses further comprising storing the subset of the samples in a memory prior to outputting the symbol (figure 2, reference 14, page 2, lines 18-19).

For claim 14, the applicant's admitted prior art (AAPA) discloses wherein the storing step stores the samples in a FIFO memory (figure 2, reference 14, page 2, lines 18-19).

As far as understood with respect to claim 15, the applicant's admitted prior art (AAPA) discloses wherein the storing step stores only the subset of samples of the symbol without storing any of the samples of the symbol other than the subset (figure 2, reference 14, page 2, lines 18-19).

For claim 16, the applicant's admitted prior art (AAPA) discloses wherein the subset of the samples are samples produced from complex coefficients occurring at the end of the symbol in the frequency domain (page 2, lines 24-26).

As far as understood with respect to claim 17, the applicant's admitted prior art (AAPA) discloses further comprising:

delaying the symbol only by the duration of said prefix (page 3, lines 11-12); and

storing, prior to outputting the symbol, only the shifted samples without storing any of the samples of the symbol other than the shifted samples (page 3, lines 1-2).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 2, 7 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over the applicants' admitted prior art (AAPA) in view of Sakoda et al. (US 6,574,283).

For claims 2, 7 and 12, the applicants' admitted prior art (AAPA) does not expressly disclose wherein the means for shifting the phase of the complex coefficients include a multiplier connected to multiply each complex coefficient by a complex value having a unity norm and a phase proportional to the frequency associated with each coefficient. In an analogous art, Sakoda et al. disclose wherein the means for shifting the phase of the complex coefficients include a multiplier connected to multiply each complex coefficient by a complex value having a unity norm and a phase proportional to the frequency associated with each coefficient (figure 8, reference 22, col. 7, lines 27-41).

Sakoda et al. disclose wherein shifting the phase of the complex coefficients includes multiplying each complex coefficient by a complex value having a unity norm and a phase proportional to the frequency associated with each coefficient (figure 8, reference 22, col. 7, lines 27-41 as set forth in claim 7); and wherein shifting the phase of the complex coefficients includes multiplying each complex coefficient by a complex value having a unity norm and a phase proportional to the frequency associated with each coefficient (figure 8, reference 22, col. 7, lines 27-41as set forth in claim 12).

One skilled in the art would have recognized the wherein the means for shifting the phase of the complex coefficients include a multiplier connected to multiply each complex coefficient by a complex value having a unity norm and a phase proportional to

the frequency associated with each coefficient, and would have applied Sakoda et al.'s random phase shift circuit 22 in the applicants' admitted prior art (AAPA). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to use Sakoda et al.'s communication method, transmission and reception apparatuses, and cellular radio communication system in the applicants' admitted prior art (AAPA) with the motivation being to provide the random phase shift circuit 22 randomly varies the phase of the transmission symbol S20 by sequentially multiplying the phase data for each symbol generated randomly from the input transmission symbol S20 (col. 7, lines 23-26).

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to TOAN D. NGUYEN whose telephone number is (571)272-3153. The examiner can normally be reached on M-F (7:00AM-4:30PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Firmin Backer can be reached on 571-272-6703. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/T. D. N./
Examiner, Art Unit 2616

/FIRMIN BACKER/
Supervisory Patent Examiner, Art Unit 2616